SBC86831 Series

Intel® Core™ 2 Duo All-In-One

Mini ITX Board
with DualView display

User's Manual

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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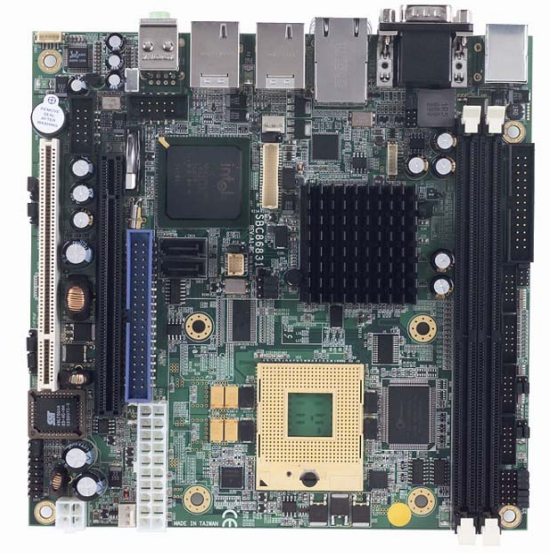
MEMO

Chapter 1
Introduction



The **SBC86831**, a Mini ITX board, supports Intel® Core 2 Duo, Core Duo, Core Solo and Celeron M processors with graphics, audio, and Gigabit Ethernet interfaces. It is practically finest embedded Socket M board in the market. It integrates Intel® 945GME & ICH7M chipsets, excellent Multiple I/O, LVDS LCD, Fast/Gigabit Ethernet and AC'97/HD digital Audio interface to make all in one single module as computing engine. It provides one PCI Express X16 for graphics or SDVO, 32-bit/33MHz PCI master which are for expansion purpose. Additionally, it provides you with unique embedded features, such as 4 serial ports (3 x RS-232 and 1 x RS-232/422/485) and Mini ITX form factor that applies an extensive array of PC peripherals.
This module supports various I/O features: CRT, LVDS LCD, Fast/Gigabit Ethernet, HD Audio, PATA IDE, SATA IDE, USB 2.0, GPIO and Watchdog timer.

1.1 Specifications

- **CPU： Socket M (478-pin) for Intel® Core™ 2 Duo, Core™ Duo, Core™ Solo and Celeron® M processors**
- **Chipset： Intel® 945GME & ICH7M**
- **Bus Clock： 533/667MHz FSB**
- **BIOS：**
  - Phoenix-Award BIOS, Y2K compliant
  - 4Mbit Flash, DMI, Plug and Play
  - SmartView for multiple LCD type selection, display mode option and application extension features
  - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory：**
  - Two x 240-pin DDR2 DIMM sockets
  - Maximum to 3GB DDR2 memory
- **L2 Cache：** integrated in CPU
- **Onboard IDE：**
  - One PATA-100 with 40-pin box-header
  - PATA-100 as PIO Mode 0-4, DMA Mode 0-2 and Ultra DMA/33/66/100
  - Two SATA-150 connectors
- **Compact Flash Socket：**
  - One Compact Flash Type II Socket (optional)
- **Onboard Multi I/O：**
  - 3 x RS-232, 1x RS-232/422/485
  - One 26-pin box-header for shared FDD or LPT (Default：LPT Port)
- **USB Interface：** Eight USB ports with fuse protection and complies with USB Spec. Rev. 2.0
- **Real Time Clock：** Integrate Intel® ICH*7M
- **Watchdog Timer：**
  - 1~255 seconds; up to 255 levels
- **Graphics/Streaming：**
  - Intel® 945GME GMCH Gen 3.5 integrated graphic engine

- Maximum up to 224MB frame buffer sharing system memory
- Maximum display resolution:
  - CRT: 2048 x1536
  - LVDS: 1600 X1200 (24-bit single/dual channel LVDS interface)
- DualView display mode:
  - CRT: 2048 x1536
  - LVDS: 1600 X1200 (24-bit single/dual channel LVDS interface)
- LCD backlight control supported

- **Expansion Interface：**
  - One PCI Express x16 slot for ADD2+ Card as default （PCI Express x16 for discrete graphics is optional with on-board LVDS function removal）
  - One PCI Express Mini Card (optional)
  - One PCI slot for 2 Bus master 32-bit expansion
- **Ethernet：**
  - Two RTL8111B Gigabit Ethernet
  - Equipped with RJ-45 interface
- **Audio：**
  - Realtek AC'97 codec audio
  - MIC-in, Line-out
- **Power Management：**
  - ACPI (Advanced Configuration and Power Interface)
- **Form Factor：**
  - Mini ITX form factor（170mm* 170mm）

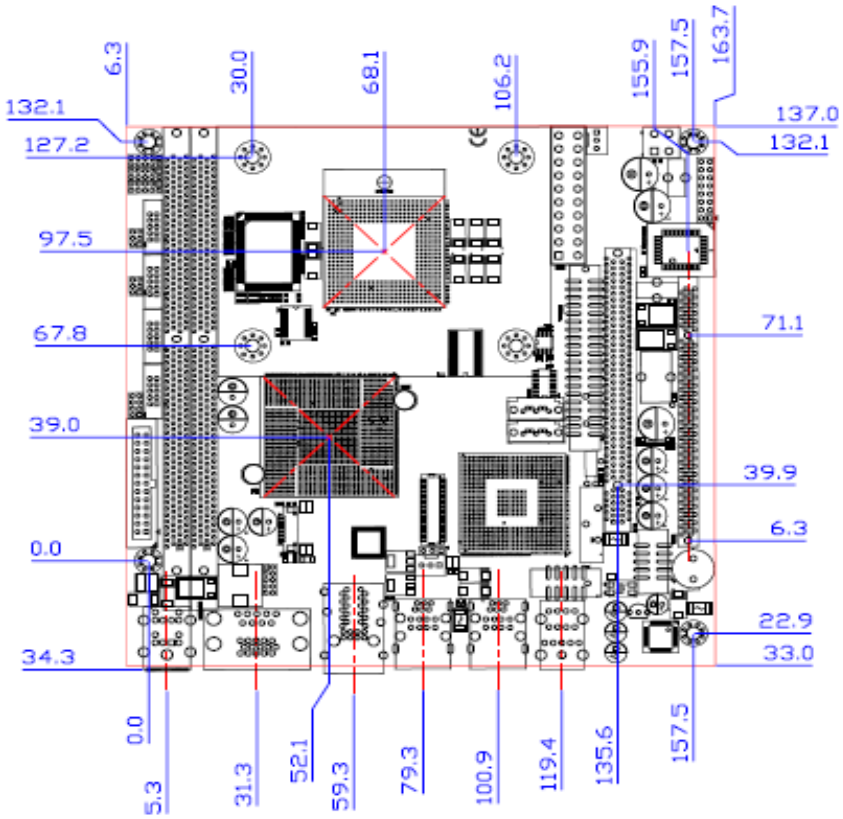
***NOTE**: All specifications and images are subject to change without notice.*

1.2 Utilities Supported

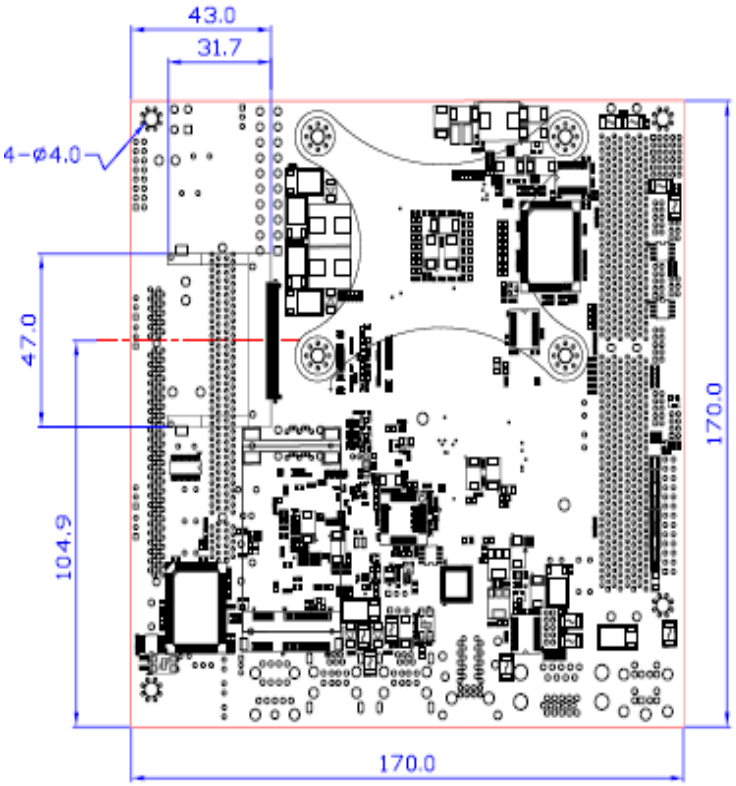
- Chipset Driver
- Ethernet Driver
- Graphic Drivers
- Audio Drivers

Chapter 2
Jumpers and Connectors

2.1 Board Layout and Fixing Holes



Component Side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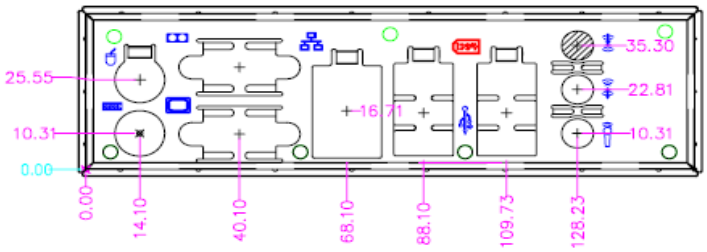
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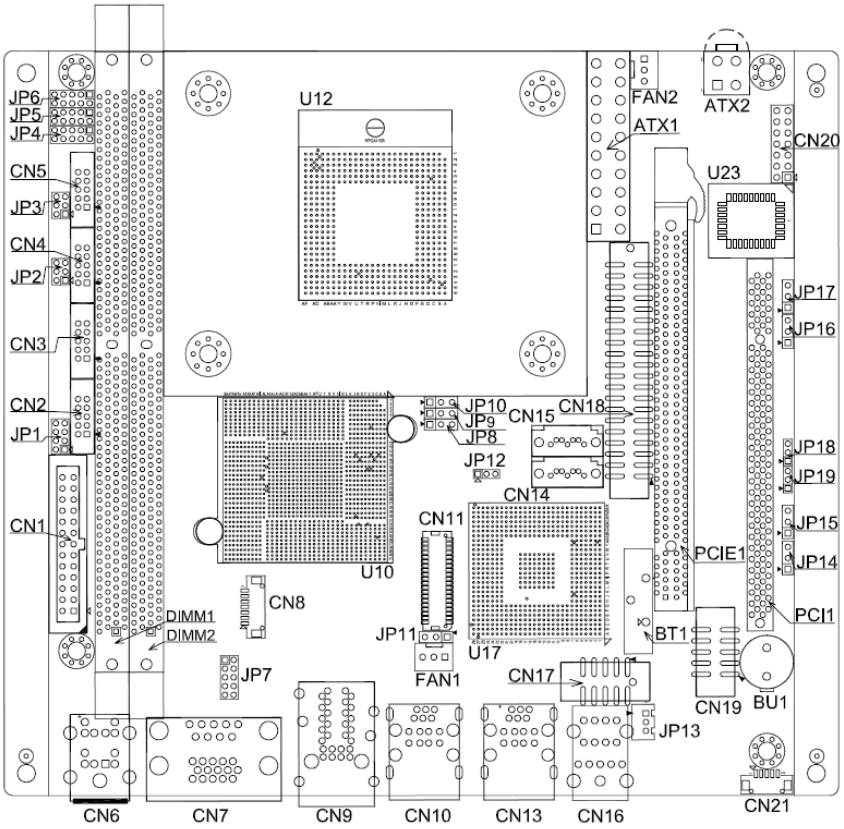
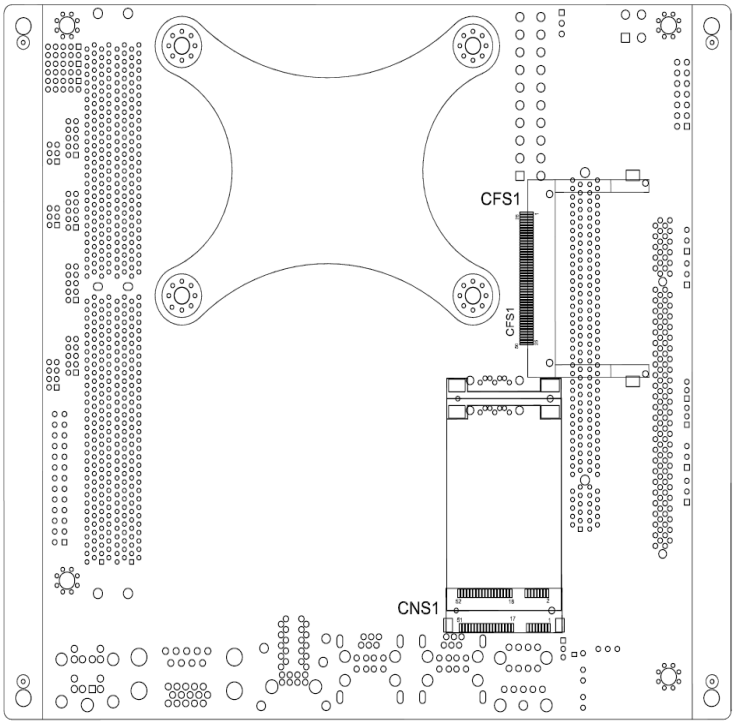
128.23

Solder Side

2.2 Placement



Component Side



Solder Side

2.3 Jumper Settings

Proper jumer settings configure the **SBC86831** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

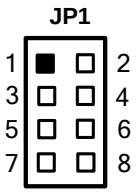
Here is a list of jumper settings：

Jumper	Default Setting		Jumper Setting
JP1	COM1 Mode Select: RS-232		Short 1-2
JP2	COM1 Mode Select: RS-232		Short 3-5,4-6
JP3	COM1 Mode Select: RS-232		Short 3-5,4-6
JP4	COM2 Mode Select	CN2 Pin 1: DCD	Short 7-9
		CN2 Pin 8: RI	Short 8-10
JP5	COM3 Mode Select	CN3 Pin 1: DCD	Short 7-9
		CN3 Pin 8: RI	Short 8-10
JP6	COM4 Mode Select	CN4 Pin 1: DCD	Short 7-9
		CN4 Pin 8: RI	Short 8-10
JP7	COM1 Mode Select	CN7 Pin 1: DCD	Short 7-9
		CN7 Pin 9: RI	Short 8-10
JP8	CPU Frequency Select: Auto		Short 1-2
JP9	CPU Frequency Select: Auto		Short 1-2
JP10	CPU Frequency Select: Auto		Short 1-2
JP11	LVDS Voltage select : 3.3V		Short 1-2
JP12	SDVO CARD Select : Enable		Short 2-3
JP14	Clear CMOS Setting : Normal		Short 1-2
JP15	TPM Function (Optional)		Short 1-2
JP16	Compact Flash Select : Slave (Optional)		Short 1-2
JP17	Compact Flash Power Select : 3.3V (Optional)		Short 1-2
JP18	USB2 Voltage select : 5V_SBY		Short 1-2
JP19	USB1 Voltage select : 5V_SBY		Short 1-2

2.3.1 COM1 Mode Select Jumper: JP1

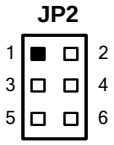
These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.

Options	Settings
RS-232	Short 1-2 (Default)
RS-422	Short 3-4
RS-485	Short 5-6,7-8



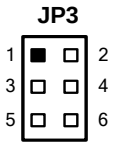
2.3.2 COM1 Mode Select Jumper: JP2

Options	Settings
RS-485	Short 1-3,2-4
RS-232	Short 3-5,4-6 (Default)



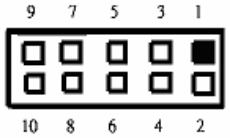
2.3.3 COM1 Mode Selec Jumper: JP3

Options	Settings
RS-485	Short 1-3,2-4
RS-232	Short 3-5,4-6(Default)



2.3.4 COM1~COM4 Mode Select for Type Jumpers: JP4, JP5, JP6, JP7

These jumpers select the COM1, COM2, COM3, COM4 ports' DCD and RI mode.



JP4, JP5, JP6, JP7

COM1 (CN7)	JP7
Pin 1=12V	Short 1-3
Pin 1=5V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9 (Default)
Pin 9=12V	Short 2-4
Pin 9=5V	Short 4-6 or 6-8
*Pin 9=RI	Short 8-10 (Default)

COM2 (CN2)	JP4
Pin 1=12V	Short 1-3
Pin 1=5V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9 (Default)
Pin 8=12V	Short 2-4
Pin 8=5V	Short 4-6 or 6-8
*Pin 8=RI	Short 8-10 (Default)

COM3 (CN3)	JP5
Pin 1=12V	Short 1-3
Pin 1=5V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9 (Default)
Pin 8=12V	Short 2-4
Pin 8=5V	Short 4-6 or 6-8
*Pin 8=RI	Short 8-10 (Default)

COM4 (CN4)	JP6
Pin 1=12V	Short 1-3
Pin 1=5V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9 (Default)
Pin 8=12V	Short 2-4
Pin 8=5V	Short 4-6 or 6-8
*Pin 8=RI	Short 8-10 (Default)

2.3.5 CPU Frequency Selec Jumpers: JP8, JP9, JP10

These jumpers help you set the CPU frequency.

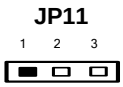
JP8, JP9, JP10

CPU Frequency	JP8	JP9	JP10
Auto Select (Default)	Short 1-2 (Default)	Short 1-2 (Default)	Short 1-2 (Default)
533MHz	Short 2-3	Short 2-3	Short 2-3
667MHz	Short 2-3	OPEN	Short 2-3

2.3.6 LVDS Voltage Selection Jumper: JP11

This jumper is to select the voltage for LVDS interface.

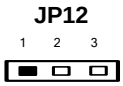
Options	Settings
3.3V	Short 1-2 (Default)
5V	Short 2-3



2.3.7 SDVO Card Selection Jumper: JP12

This jumper makes the selection that PCI express x 16 slot enables or disables the SDVO mode.

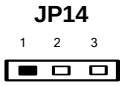
Options	Settings
SDVO Card Disable	Short 1-2
SDVO Card Enable	Short 2-3 (Default)



2.3.8 CMOS Clear Jumper: JP14

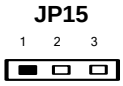
You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Options	Settings
Normal	Short 1-2 (Default)
Clear CMOS	Short 2-3



2.3.9 TPM PP (Physical Presence) Select Jumper: JP15

Options	Settings
Accept both H/W & S/W signals.	Short 1-2 (Default)
Only Accept H/W signals.	Short 2-3



This jumper is *optional*. It is not mounted by default design.

2.3.10 Compact Flash Setting Jumper: JP16

This jumper is to select the master or slave for Compact Flash interface.

Options	Settings
Slave	Short 1-2 (Default)
Master	Short 2-3

JP16

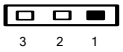
This jumper is *optional*. It is not mounted by default design.

2.3.11 Compact Flash Setting Jumper: JP17

This jumper is to select the voltage for Compact Flash interface.

Options	Settings
3.3V	Short 1-2 (Default)
5V	Short 2-3

JP17



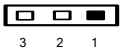
This jumper is *optional*. It is not mounted by default design.

2.3.12 USB Power Select Jumpers: JP18, JP19

This jumper is to select the voltage for USB interface.

Options	Settings
5V_SBY	Short 1-2(Default)
5V	Short 2-3

JP18,JP19



2.4 Connectors

Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the **SBC86831** Series.

Connectors	Label
Parallel Port or Flopply Connector (Default : LPT)	CN1
Serial Port2 Connector	CN2
Serial Port3 Connector	CN3
Serial Port4 Connector	CN4
Digital I/O Connector	CN5
PS2 Keyboard/Mouse Connector	CN6
VGA & Serial Port1 Connector	CN7
LVDS Backlight Connector	CN8
LAN*2 Connector	CN9
USB*2+IEE1394a Connector	CN10
LVDS Connector	CN11
USB*2+IEE1394a Connector	CN13
SATA Connector	CN14
SATA Connector	CN15
Audio Phone Jack Connector	CN16
USB Connector	CN17
Parallel IDE Connector	CN18
USB Connector	CN19
Flat Panel Bezel Connector	CN20
Internal Audio Connector	CN21
ATX Power Connector	ATX1
+12V Power Connector	ATX2
Compact Flash™ Socket (Optional)	CFS1
PCI-EXPRESS Mini Card Socket (Optional)	CNS1
DDRII DIMM	DIMM1
DDRII DIMM	DIMM2
System FAN Connector	FAN1
CPU FAN Connector	FAN2
SM Bus Connector	JP13

Slim PCI Slot	PCI1
PCI- EXPRESS X16 Slot	PCIE1

2.4.1 Parallel Port or Floppy Connector: CN1

Print Port Connector [Default]

This board has a multi-mode parallel port to support:

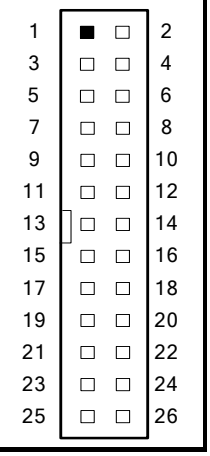
1. Standard mode:
IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port

2. Enhanced mode:
Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)

3. High speed mode:
Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

Pin	Signal	Pin	Signal
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	NC

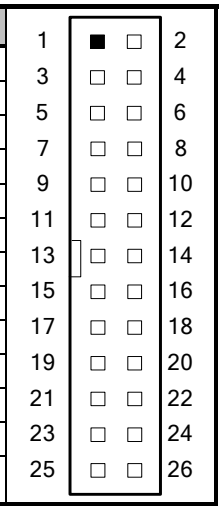
CN1



Floppy Connector [Optional]

The FDD connector is used connect the FDD cable while the other end of the cable connects to the FDD drive. The type of FDD drives supported are : 360KB, 720KB,1.2MB,1.44MB and 2.88MB.

Pin	Signal	Pin	Signal
1	DRIVE0	2	NC
3	INDEX	4	NC
5	MOTOR ON	6	NC
7	DSKCHG	8	NC
9	DIR	10	GND
11	STEP	12	GND
13	WDATA	14	GND
15	WGATE	16	GND
17	TRK0	18	GND
19	WPT	20	GND
21	RDATA	22	GND
23	HDSEL	24	GND
25	DSKCHG	26	NC

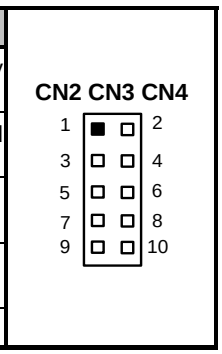


***Parallel port* and *Floppy Connector* to share same connector, so can only 2 select 1. And The *parallel port* by default design.**

2.4.2 Serial Port Connectors: CN2, CN3, CN4

Please refer to the RS-232 pin assignment as listed below:

Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC

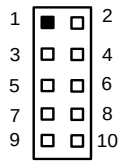


2.4.3 Digital I/O Port (DIO) Connector: CN5

The board is equipped an 8-channel digital I/O connector **CN5** that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

Pin	Signal	Pin	Signal
1	Digital Input 0	2	Digital Output 0
3	Digital Input 1	4	Digital Output 1
5	Digital Input 2	6	Digital Output 2
7	Ground (GND)	8	Digital Output 3
9	Ground (GND)	10	Digital Output 4

CN5

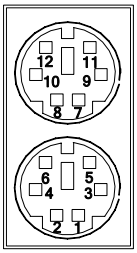


2.4.4 Keyboard and PS/2 Mouse Connector: CN6

The **SBC86831** provides a keyboard and Mouse interface that is a DIN connector .To install PS/2 keyboard and mouse, plug the mouse to the upper port (green) and the keyboard to the lower port(purple).

Pin	Signal	Pin	Signal
1	K/B Data	7	M/S Data
2	M/S Data	8	NC
3	GND	9	GND
4	VCC	10	VCC
5	K/B CLK	11	M/S CLK
6	M/S CLK	12	NC

CN6



2.4.5 VGA & Serial Port 1 Connectors: CN7A, CN7B

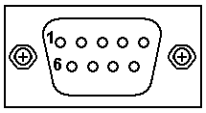
CN7 is double deck D-Sub connector. The upper is a standard 9-pin pin DB9 connector for the Serial port 1(**CN7A**).

CN7A is RS-232/422/485, jumper selectable with auto flow control features. All four ports feature +5V/12V power capability on DCD and RI, depending on the jumper setting.

CN7B is a standard 15-pin pin DB15 connector commonly used for the CRT VGA display.

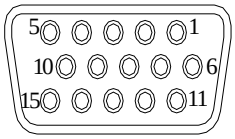
Pin	Signal
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)

CN7A



Pin	Signal
1	Red
2	Green
3	Blue
4	N.C
5	Ground (GND)
6	AnalogGround（AGND）
7	AnalogGround（AGND）
8	AnalogGround（AGND）
9	N.C
10	Ground (GND)
11	N.C
12	DDC DATA
13	Horizontal Sync
14	Vertical Sync
15	DDC CLK

CN7B

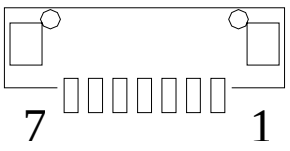


2.4.6 LVDS Backlight Connector: CN8

The 7-pin inverter connector on the SBC is with Hirose connector. The matching connector is strongly recommended to use Hirose DF13-7S-1.25C.

Pin	Signal
1	+12V
2	+12V
3	+5V
4	ENABLE
5	GND
6	GND
7	GND

CN8

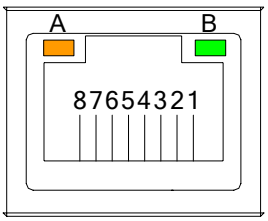


2.4.7 LAN*2 Connectors: CN9_A, CN9_B

The board is equipped with a high performance Plug and Play Ethernet interface fully compliant with the IEEE 802.3 standard. To connect the board to 10-Base-T, 100-Base-T or 1000 Base-T hub, just plug one end of cable to the Ethernet connector and connect the other end (phone jack) to a 10-Base-T, 100-Base-T or 1000 Base-T hub.

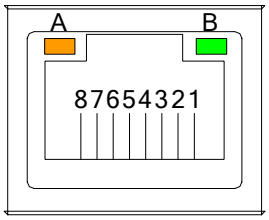
Pin	Signal
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	MDI2+
6	MDI2-
7	MDI3+
8	MDI3-
A	Active LED (Yellow)
B	1000 (Orange) / 100 (Green) LAN LED

CN9_A



Pin	Signal
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	MDI2+
6	MDI2-
7	MDI3+
8	MDI3-
A	Active LED (Yellow)
B	1000 (Orange) / 100 (Green) LAN LED

CN9_B



2.4.8 USB*2+IEE1394a Connectors: CN10, CN13

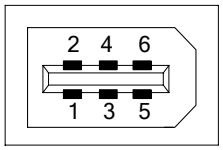
The **SBC86831 Series** have three layers USB &IEE1394a Connector **(CN10, CN13)** & two box-header connectors **(CN17,CN19).**

The upper is IEE1394a connector (**CN10A, CN13A**).Serial interface standard set by institute of Electrical and Electronics Engineers, which has features like high speed, high bandwidth and hot plug.

The lower are double deck USB Connector (**CN10B,CN13B**) , as USB 2.0 compliant (480Mbps) that can adapt any USB peripherals, such as keyboard, mouse, scanner…etc.

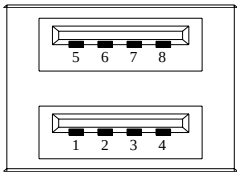
Pin	Signal
1	+12V
2	GND
3	XTPB0N
4	XTPB0P
5	XTPA0N
6	XTPAP
7	GND

CN10A



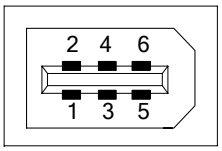
Pin	Signal
1	+5V
2	USB D0-
3	USB D0+
4	GND
5	+5V
6	USB D1-
7	USB D1+
8	GND

CN10B



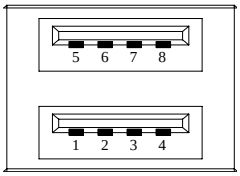
Pin	Signal
1	+12V
2	GND
3	XTPB1N
4	XTPB1P
5	XTPA1N
6	XTPAP
7	GND

CN13A



Pin	Signal
1	+5V
2	USB D2-
3	USB D2+
4	GND
5	+5V
6	USB D3-
7	USB D3+
8	GND

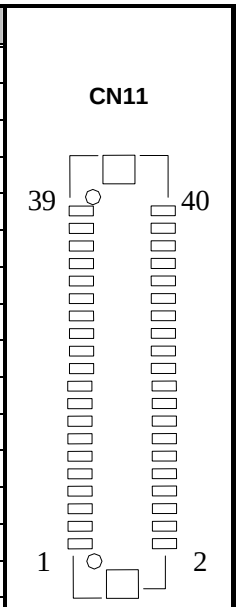
CN13B



2.4.9 LVDS Flat Panel Connector: CN11

The LVDS connector on the SBC is a 40-pin connector. The matching connector is strongly recommended to use JST SHDR-40V-S-B.

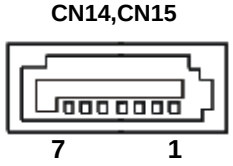
Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND



2.4.10 SATA Connectors: CN14, CN15

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+



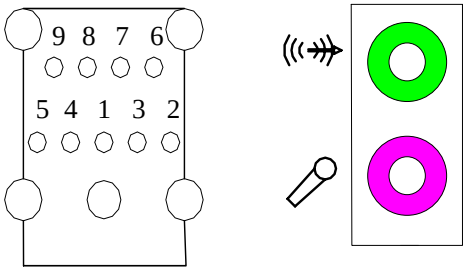
7	GND	

2.4.11 Audio Phone Jack Connector: CN16

After install onboard audio driver, you may connect speaker to Line Out jack, microphone to MIC in jack.

Pin	Signal
1	Ground (GND)
2	VREFOUT
3	N.C
4	Ground (GND)
5	MIC_IN
6	LINE_OUT_L
7	LINE_OUT_L1

CN16

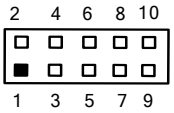


2.4.12 USB Connectors: CN17, CN19

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. These are 10-pin standard USB connectors.

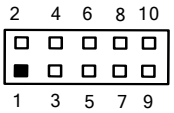
Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB D4-	4	USB D5-
5	USB D4+	6	USB D5+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)

CN17



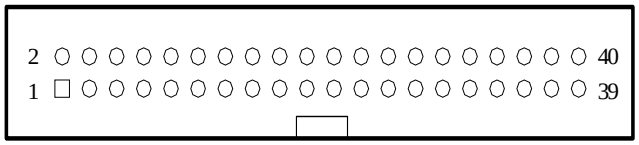
Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB D6-	4	USB D7-
5	USB D6+	6	USB D7+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)

CN19



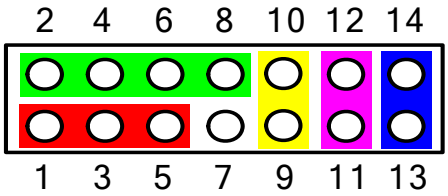
2.4.13 Parallel IDE Connector: CN18

An IDE device connects to the computer via an IDE connector. One IDE connector can connect to one IDE cable, and the single IDE cable can then connect to two IDE devices. If you wish to connect two IDE devices, please set the jumper on one IDE device as Master and the other as Slave.



Pin	Signal	Pin	Signal	Pin	Signal
1	Reset #	2	GND	3	Data 7
4	Data 8	5	Data 6	6	Data 9
7	Data 5	8	Data 10	9	Data 4
10	Data 11	11	Data 3	12	Data 12
13	Data 2	14	Data 13	15	Data 1
16	Data 14	17	Data 0	18	Data 15
19	GND	20	No connector	21	No connector
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	No connector	29	No connector	30	GND-Default
31	Interrupt	32	No connector	33	SA1
34	No connector	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND				

2.4.14 Flat Panel Bezel Connector: CN20



- **Power LED**

This 3-pin connector named as Pin 1 and Pin 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**

Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **ATX Power On/Off Button**

This 2-pin connector named as Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**

Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**

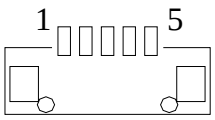
This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.15 Internal Audio Connector: CN21

The **SBC86831** supports internal audio interface. **CN21** is a 5pin-header connector commonly used for the audio. After install onboard audio driver, you may connect speaker to Line Out jack, microphone to MIC in jack.

Pin	Signal
1	LINE_OUT_L
2	GND
3	LINE_OUT_R
4	GND
5	MIC_IN

CN21



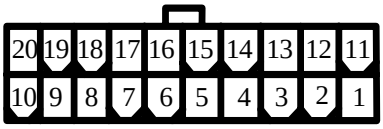
2.4.16 ATX Power Connector: ATX1

With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, please make sure that all components and devices are properly installed. Align the power connector with its proper location on the motherboard and connect tightly.

If you use a 20-pin ATX power supply, please remove the small cover on the power connector on the motherboard before plugging in the power cord; otherwise, please do not remove it.

Pin	Signal	Pin	Signal
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

ATX1

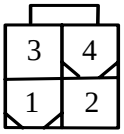


2.4.17 +12V ATX Power Connector: ATX2

The ATX2 power connector mainly supplies power to the CPU. If the ATX2 power connector is not connected, the system will not start.

Pin	Signal
1	GND
2	GND
3	+12V
4	+12V

ATX2



2.4.18 Compact Flash™ Socket: CFS1 (Optional)

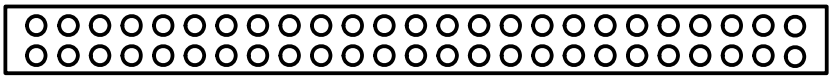
The **SBC86831** Series is equipped with a Compact Flash disk type-II socket on the solder side and it supports the IDE interface Compact Flash disk card with DMA mode supported. The socket itself is especially designed to prevent any incorrect installation of the Compact Flash disk card.

When installing or removing the Compact Flash disk card, please make sure that the system power is off.

The Compact Flash disk card is defaulted as the C: or D: disk drive in your PC system.

This connector is *optional*. It is not mounted by default design.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25



26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

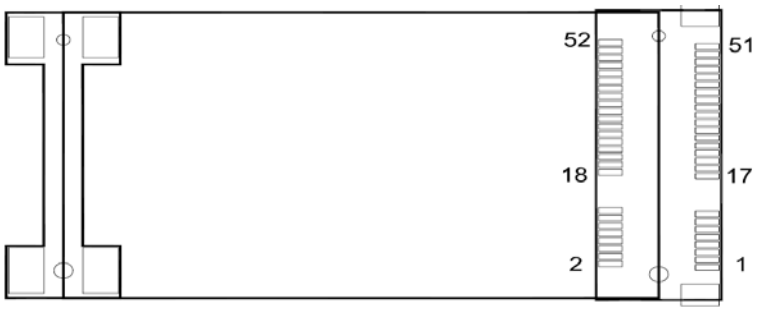
Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0-	32	CS1-

Pin	Signal	Pin	Signal
8	Address 10	33	VS1-
9	ATASEL	34	IORD-
10	Address 9	35	IOWR-
11	Address 8	36	WE#
12	Address 7	37	INTR
13	+5V	38	+5V
14	Address 6	39	CSEL-
15	Address 5	40	VS2-
16	Address 4	41	RESET-
17	Address 3	42	IORDY-
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP-
21	Data 0	46	PDIAG-
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16-	49	Data 10
25	CD2-	50	GND

2.4.19 PCI-Express Mini Card Socket: CNS1 (Optional)

CNS1 is a PCI Express Mini Card socket, support both a x1 PCI Express link and a USB 2.0 link. A PCI Express Mini Card can use either PCI Express or USB 2.0 (or both). USB 2.0 support will help during the transition to PCI Express, because peripheral vendors will need time to design PCI Express into their chip sets. During the transition, PCI Express Mini Cards can be quickly implemented using USB 2.0.

This connector is *optional*. It is not mounted by default design.



Pin	Signal	Pin	Signal
1	PCIE_WAKE-	2	+3.3V
3	N.C	4	GND
5	N.C	6	+1.5 V
7	GND	8	N.C
9	GND	10	N.C
11	PCIE_CLK-	12	N.C
13	PCIE_CLK+	14	N.C
15	GND	16	N.C
17	N.C	18	GND
19	N.C	20	N.C
21	GND	22	PCIE_RESET-
23	PCIE_RXN	24	+3.3V_SBY
25	PCIE_RXP	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_TXN	32	SMB_DATA
33	PCIE_TXP	34	GND
35	GND	36	USB_D-
37	N.C	38	USB_D+
39	N.C	40	GND
41	N.C	42	N.C
43	N.C	44	N.C

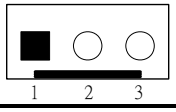
Pin	Signal	Pin	Signal
45	N.C	46	N.C
47	N.C	48	+1.5V
49	N.C	50	GND
51	N.C	52	+3.3V

2.4.20 System & CPU FAN Connectors: FAN1, FAN2

FAN1 is system fan connector, and **FAN2** is CPU fan connector. Pentium microprocessors require a fan for heat dispensing. The fan connector on **SBC86831 Series** provides power to the fan.

Pin	Signal
1	GND
2	+12V
3	Sensor

FAN1, FAN2

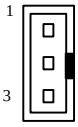


2.4.21 SMBUS Connector: JP13

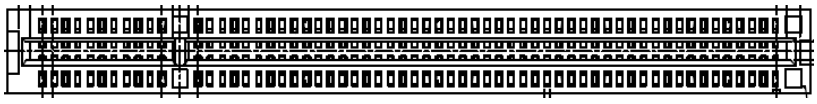
Connector JP13 is for SMBUS interface support

Pin	Signal
1	CLOCK
2	DATA
3	GND

JP13



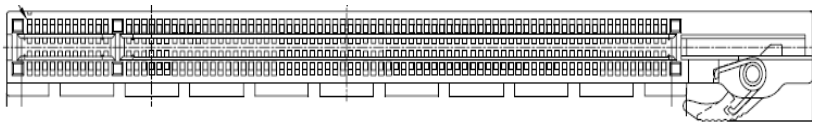
2.4.22 Slim PCI Slot: PCI1



Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	TRST-	A2	+12V	B1	-12V	B2	TCK
A3	TMS	A4	TDI	B3	GND	B4	TDO
A5	+5V	A6	INTA-	B5	+5V	B6	+5V
A7	INTC-	A8	+5V	B7	INTB-	B8	INTD-
A9	N.C	A10	+5V	B9	N.C	B10	REQ1-
A11	N.C	A12	GND	B11	N.C	B12	GND
A13	GND	A14	GNT1-	B13	GND	B14	CLK_33M
A15	RESET-	A16	+5V	B15	GND	B16	CLK_33M
A17	GNT0-	A18	GND	B17	GND	B18	REQ0-
A19	PME-	A20	AD[30]	B19	+5V	B20	AD[31]
A21	+3.3V	A22	AD[28]	B21	AD[29]	B22	GND
A23	AD[26]	A24	GND	B23	AD[27]	B24	AD[25]
A25	AD[24]	A26	IDSEL	B25	+3.3V	B26	C/BE3-
A27	+3.3V	A28	AD[22]	B27	AD[23]	B28	GND
A29	AD[20]	A30	GND	B29	AD[21]	B30	AD[19]
A31	AD[18]	A32	AD[16]	B31	+3.3V	B32	AD[17]
A33	+3.3V	A34	FRAME-	B33	C/BE2-	B34	GND
A35	GND	A36	TRDY-	B35	IRDY-	B36	+3.3V
A37	GND	A38	STOP-	B37	DEVSEL-	B38	GND
A39	+3.3V	A40	SMB_CLK	B39	LOCK-	B40	PERR-
A41	SMD_DATA	A42	GND	B41	+3.3V	B42	SERR-
A43	PAR	A44	AD[15]	B43	+3.3V	B44	C/BE1-
A45	+3.3V	A46	AD[13]	B45	AD[14]	B46	GND
A47	AD[11]	A48	GND	B47	AD[12]	B48	AD[10]
A49	AD[9]	A52	C/BE-	B49	GND	B52	AD[6]
A53	+3.3V	A54	AD[6]	B53	AD[7]	D54	+3.3V
A55	AD[4]	A56	GND	B55	AD[5]	B56	AD[3]
A57	AD[2]	A58	AD[0]	B57	GND	B58	AD[1]
A59	+5V	A60	REQ64-	B59	+5V	B60	ACK64-
A61	+5V	A62	+5V	B61	+5V	B62	+5V

2.4.23 PCI-Express X16 Slot: PCIE1

PCIE1 is a PCI-Express x16 graphics interface, It can support PCI-Express x16 graphics card (PCI-Express x16), and Add2 card(SDVO Bus). But it can only 2 select 1.And The Add2 card (SDVO Bus) by default design.



Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	N.C	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	+12V	B4	GND
A5	N.C.	A6	N.C.	B5	SMB_CLK	B6	SMB_DATA
A7	N.C	A8	N.C	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	N.C	B10	+3.3V_SBY
A11	PCIE_RESET-	A12	GND	B11	PCIE_WAKE- N.C (Default)	B12	N.C
A13	PCIE_CLK+ N.C (Default)	A14	PCIE_CLK- N.C (Default)	B13	GND	B14	PEG_TXP0 N.C (Default)
A15	GND	A16	PEG_RXP0 N.C (Default)	B15	PEG_TXN0 N.C (Default)	B16	GND
A17	PEG_RXN0 N.C (Default)	A18	GND	B17	N.C SDVO_CRTCLK (Default)	B18	GND
A19	N.C	A20	GND	B19	PEG_TXP1 N.C (Default)	B20	PEG_TXN1 N.C (Default)
A21	PEG_RXP1 N.C (Default)	A22	PEG_RXN1 N.C (Default)	B21	GND	B22	GND

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A23	GND	A24	GND	B23	PEG_TXP2 N.C (Default)	B24	PEG_TXN2 N.C (Default)
A25	PEG_RXP2 SDVO_FLDSTALL+ (Default)	A26	PEG_RXN2 SDVO_FLDSTALL- (Default)	B25	GND	B26	GND
A27	GND	A28	GND	B27	PEG_TXP3 N.C (Default)	B28	PEG_TXN3 N.C (Default)
A29	PEG_RXP3 N.C (Default)	A30	PEG_RXN3 N.C (Default)	B29	GND	B30	N.C
A31	GND	A32	N.C	B31	N.C SDVO_CRTDATA (Default)	B32	GND
A33	N.C	A34	GND	B33	PEG_TXP4 SDVO_RED+ (Default)	B34	PEG_TXN4 SDVO_RED- (Default)
A35	PEG_RXP4 N.C (Default)	A36	PEG_RXN4 N.C (Default)	B35	GND	B36	GND
A37	GND	A38	GND	B37	PEG_TXP5 SDVO_GREEN+ (Default)	B38	PEG_TXN5 SDVO_GREEN- (Default)
A39	PEG_RXP5 SDVO_INT+ (Default)	A40	PEG_RXN5 SDVO_INT- (Default)	B39	GND	B40	GND
A41	GND	A42	GND	B41	PEG_TXP6 SDVO_BLUE+ (Default)	B42	PEG_TXN6 SDVO_BLUE- (Default)
A43	PEG_RXP6 N.C (Default)	A44	PEG_RXN6 N.C (Default)	B43	GND	B44	GND
A45	GND	A46	GND	B45	PEG_TXP7 SDVO_CLK+ (Default)	B46	PEG_TXN7 SDVO_CLK- (Default)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A47	PEG_RXP7 N.C (Default)	A48	PEG_RXN7 N.C (Default)	B47	GND	B48	MCH_CFG_20
A49	GND	A50	N.C	B49	GND	B50	PEG_TXP8 N.C (Default)
A51	GND	A52	PEG_RXP8 N.C (Default)	B51	PEG_TXN8 N.C (Default)	B52	GND
A53	PEG_RXN8 N.C (Default)	A54	GND	B53	GND	B54	PEG_TXP9 N.C (Default)
A55	GND	A56	PEG_RXP9 N.C (Default)	B55	PEG_TXN9 N.C (Default)	B56	GND
A57	PEG_RXN9 N.C (Default)	A58	GND	B57	GND	B58	PEG_TXP10 N.C (Default)
A59	GND	A60	PEG_RXP10 N.C (Default)	B59	PEG_TXN10 N.C (Default)	B60	GND
A61	PEG_RXN10 N.C (Default)	A62	GND	B61	GND	B62	PEG_TXP11 N.C (Default)
A63	GND	A64	PEG_RXP11 N.C (Default)	B63	PEG_TXN11 N.C (Default)	B64	GND
A65	PEG_RXN11 N.C (Default)	A66	GND	B65	GND	B66	PEG_TXP12 N.C (Default)
A67	GND	A68	PEG_RXP12 N.C (Default)	B67	PEG_TXN12 N.C (Default)	B68	GND
A69	PEG_RXN12 N.C (Default)	A70	GND	B69	GND	B70	PEG_TXP13 N.C (Default)
A71	GND	A72	PEG_RXP13 N.C (Default)	B71	PEG_TXN13 N.C (Default)	B72	GND
A73	PEG_RXN13 N.C (Default)	A74	GND	B73	GND	B74	PEG_TXP14 N.C (Default)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A75	GND	A76	PEG_RXP14 N.C (Default)	B75	PEG_TXN14 N.C (Default)	B76	GND
A77	PEG_RXN14 N.C (Default)	A78	GND	B77	GND	B78	PEG_TXP15 N.C (Default)
A79	GND	A80	PEG_RXP15 N.C (Default)	B79	PEG_TXN15 N.C (Default)	B80	GND
A81	PEG_RXN15 N.C (Default)	A82	GND	B81	N.C	B82	N.C

※ Green words： It is by PCI-Express x16 graphics interface.

※ Blue words：It is by SDVO bus of add2 card interface. And SDVO bus of add2 card by default design.

MEMO

Chapter 3
Hardware Description

3.1 Microprocessors

The **SBC86831** Series supports Intel® Core 2 Duo, Core Duo, Core Solo and Celeron M processors, which make your system operated under Windows 2000/XP and Linux environments. The system performance depends on the microprocessor. Make sure your installed microprocessor with all correct settings that prevents the CPU from damages.

3.2 BIOS

The **SBC86831** Series uses Award Plug and Play BIOS with a single 4Mbit Flash EPROM.

3.3 System Memory

The **SBC86831** Series industrial CPU card supports two 240-pin DDR2 DIMM sockets for a maximum memory of 3GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB.

3.4 I/O Port Address Map

The Intel® Pentium III/Celeron® M CPUs can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0C0-0DF	DMA controller #2
0F0	Clear math coprocessor busy signal
0F1	Reset math coprocessor
0F8-0FF	Math processor
1F0-1F8	Fixed disk controller
250-25F	HR I/O
300-31F	Prototype card
380-38F	SDLC #2
3A0-3AF	SDLC #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)
3F0-3FF	Super I/O

3.5 Interrupt Controller

The **SBC86831 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	PCI Device Share
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	—

MEMO

Chapter 4
Award BIOS Utility

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

4.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

4.2 Control Keys

Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

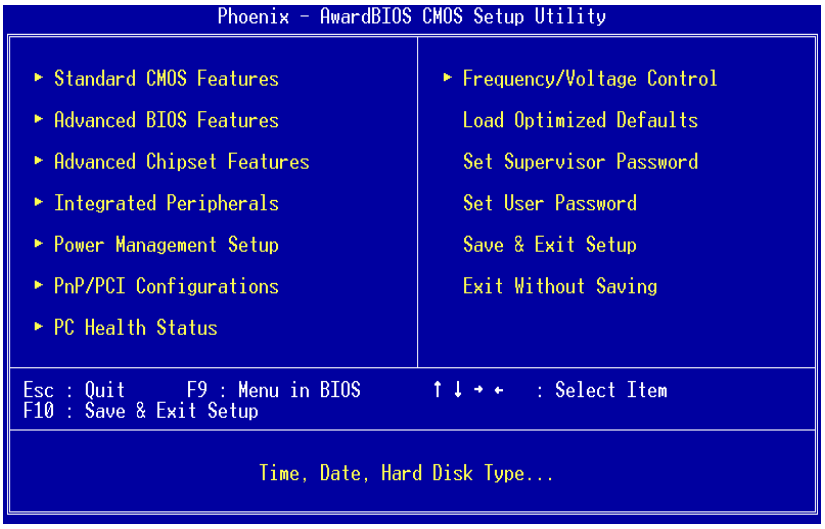
4.3 Getting Help

- **Main Menu**
  The online description of the highlighted setup function is displayed at the bottom of the screen.

- **Status Page Setup Menu/Option Page Setup Menu**
  Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

4.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

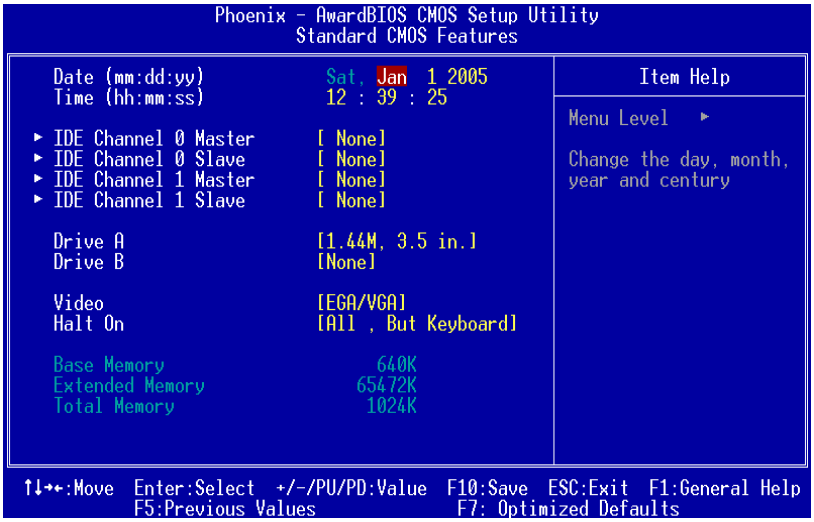

Phoenix - AwardBIOS CMOS Setup Utility
▸ Standard CMOS Features
▸ Advanced BIOS Features
▸ Advanced Chipset Features
▸ Integrated Peripherals
▸ Power Management Setup
▸ PnP/PCI Configurations
▸ PC Health Status
▸ Frequency/Voltage Control
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
Time, Date, Hard Disk Type...

NOTE: *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.5 Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and use <PgUp> or <PgDn> key to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Sat, Jan 1 2005
Time (hh:mm:ss) 12 : 39 : 25
IDE Channel 0 Master [None]
IDE Channel 0 Slave [None]
IDE Channel 1 Master [None]
IDE Channel 1 Slave [None]
Drive A [1.44M, 3.5 in.]
Drive B [None]
Video [EGA/VGA]
Halt On [All , But Keyboard]
Base Memory 640K
Extended Memory 65472K
Total Memory 1024K
Item Help
Menu Level ▸
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	It is determined by the BIOS and read only, from Sunday to Saturday.
date	It can be keyed with the numerical/ function key, from 1 to 31.
month	It is from January to December.
year	It shows the current year of BIOS.

- **Time**
  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Primary Master/Primary Slave**
  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
  If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the HDD interface controller supports ESDI, select "Type 1".
  If the HDD interface controller supports SCSI, select "None".
  If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	**LANDZONE**	landing zone
HEADS	number of heads	**SECTORS**	number of sectors
PRECOMP	write precom	**MODE**	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Dive A type/Drive B type**
  The category identifies the types of floppy disk drive A or drive B installed in the computer.

None	No floppy drive installed
360K, 3.5 in	3.5 inch PC-type standard drive; 360Kb Mini ITXcity
1.2M, 3.5 in	3.5 inch AT-type high-density drive; 1.2MB Mini ITXcity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb Mini ITXcity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB Mini ITXcity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB Mini ITXcity

- **Halt On**
  This item determines whether the system will halt or not, if an error is detected while powering up.

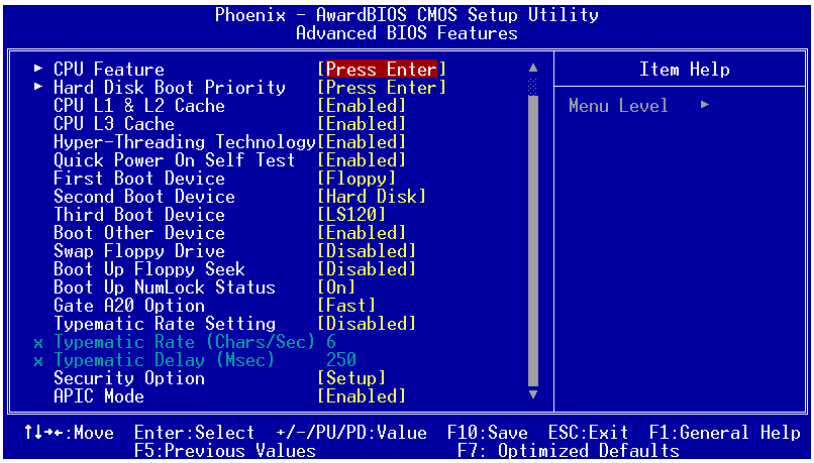
Halt On

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.
All, But Diskette	The system booting will not stop for a disk error; it will stop for other errors.
All, But Disk/Key	The system booting will not stop for a keyboard or disk error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

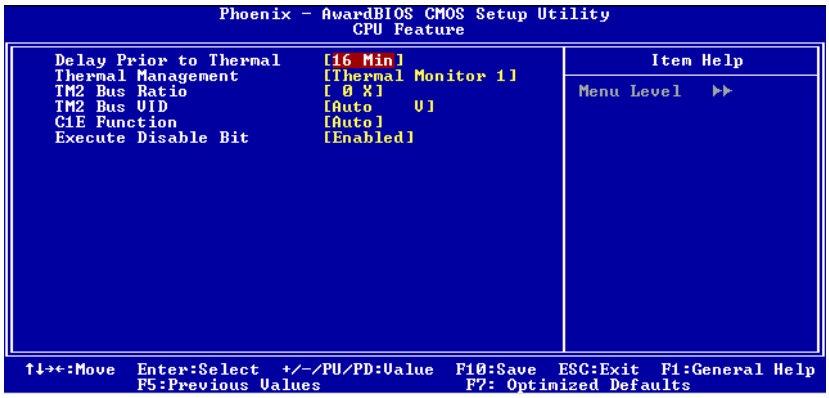
4.6 Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
CPU Feature [Press Enter]
Hard Disk Boot Priority [Press Enter]
CPU L1 & L2 Cache [Enabled]
CPU L3 Cache [Enabled]
Hyper-Threading Technology [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [Floppy]
Second Boot Device [Hard Disk]
Third Boot Device [LS120]
Boot Other Device [Enabled]
Swap Floppy Drive [Disabled]
Boot Up Floppy Seek [Disabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
APIC Mode [Enabled]
Item Help
Menu Level ▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

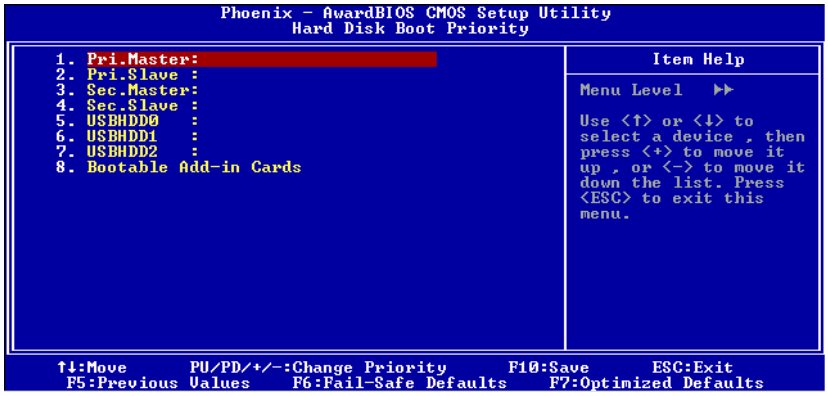
- **CPU Feature**

Scroll to this item and press <Enter> to view the CPU Feature sub menu.


Phoenix - AwardBIOS CMOS Setup Utility
CPU Feature
Delay Prior to Thermal [16 Min]
Thermal Management [Thermal Monitor 1]
TM2 Bus Ratio [0 X]
TM2 Bus VID [Auto V]
C1E Function [Auto]
Execute Disable Bit [Enabled]
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Hard Disk Boot Priority**

  Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.


Phoenix - AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority
1. Pri.Master:
2. Pri.Slave :
3. Sec.Master:
4. Sec.Slave :
5. USBHDD0 :
6. USBHDD1 :
7. USBHDD2 :
8. Bootable Add-in Cards
Item Help
Menu Level ▶▶
Use <↑> or <↓> to select a device , then press <+> to move it up , or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓:Move PU/PD/+/-:Change Priority F10:Save ESC:Exit
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

- **CPU L1 & L2 Cache**

  These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is *"Enabled"*. CPUs with no built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

- **Hyper-Threading Technology**

  Use this item to enable or disable Hyper-Threading Technology, which makes a single physical processor perform multi-tasking function as two logical ones.

- **Quick Power On Self Test**

  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is "Enabled".

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**

These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Swap Floppy Drive**
  This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swap floppy drive assignments so that Drive A becomes Drive B, and Drive B become Drive A. By default, this field is set to *Disabled.*

- **Boot Other Device**
  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is "*Enabled*".

- **Boot Up Floppy Seek**
  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is "Enabled".

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.

- **Boot Up NumLock Status**
  Set the the Num Lock status when the system is powered on. The default value is *"On"*.

- **Gate A20 Option**
  The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**
  This item determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Typematic Rate Setting

Enabled	Enable typematic rate and typematic delay programming.
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items, controlled by keyboard.

- **Typematic Rate (Chars/Sec)**
  This option refers to character numbers typed per second by the keyboard. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec)**
  This option defines how many milliseconds must elapse before a held-down key begins generating repeat characters. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

NOTE: *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything,*

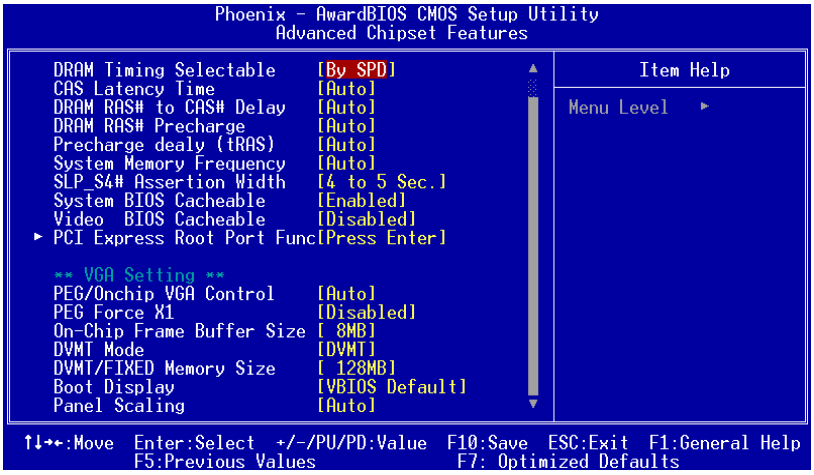
just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.

- **APIC Mode**
  Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.
- **MPS Version Control For OS**
  This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.

Press <Esc> to return to the Main Menu page.

4.7 Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing Selectable [By SPD]
CAS Latency Time [Auto]
DRAM RAS# to CAS# Delay [Auto]
DRAM RAS# Precharge [Auto]
Precharge dealy (tRAS) [Auto]
System Memory Frequency [Auto]
SLP_S4# Assertion Width [4 to 5 Sec.]
System BIOS Cacheable [Enabled]
Video BIOS Cacheable [Disabled]
PCI Express Root Port Func [Press Enter]
** VGA Setting **
PEG/Onchip VGA Control [Auto]
PEG Force X1 [Disabled]
On-Chip Frame Buffer Size [8MB]
DVMT Mode [DVMT]
DVMT/FIXED Memory Size [128MB]
Boot Display [VBIOS Default]
Panel Scaling [Auto]
Item Help
Menu Level ▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

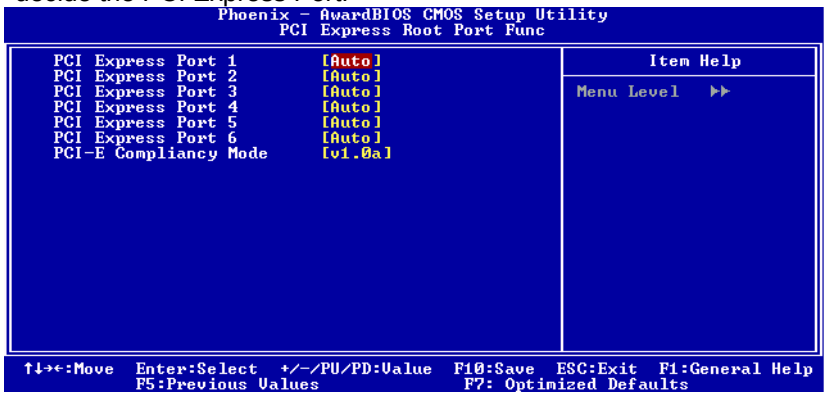
- **DRAM Timing Selectable**
  Use this item to increase the timing of the memory. This is related to the cooling of memory.

- **CAS Latency Time**
  You can select CAS latency time in HCLKs 2, 3, or Auto. The board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

- **System BIOS Cacheable**
  Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.

- **Video BIOS Cacheable**
  This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

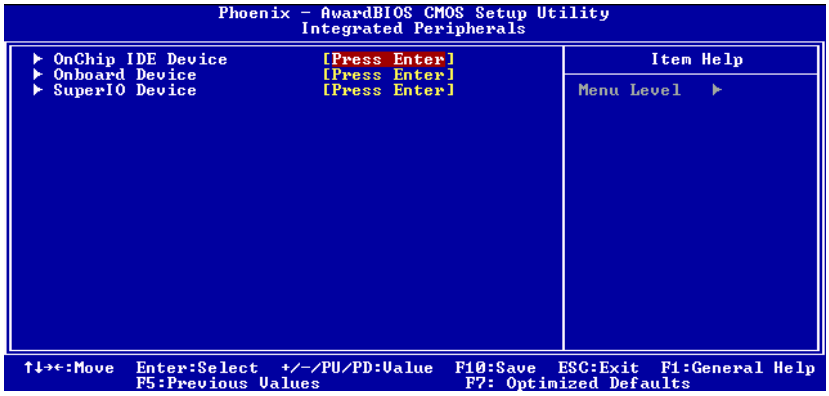
- **PCI Express Root Port Func**
  Scroll to this item and press <Enter> to view the sub menu to decide the PCI Express Port.


Phoenix - AwardBIOS CMOS Setup Utility
PCI Express Root Port Func
PCI Express Port 1 [Auto]
PCI Express Port 2 [Auto]
PCI Express Port 3 [Auto]
PCI Express Port 4 [Auto]
PCI Express Port 5 [Auto]
PCI Express Port 6 [Auto]
PCI-E Compliancy Mode [v1.0a]
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

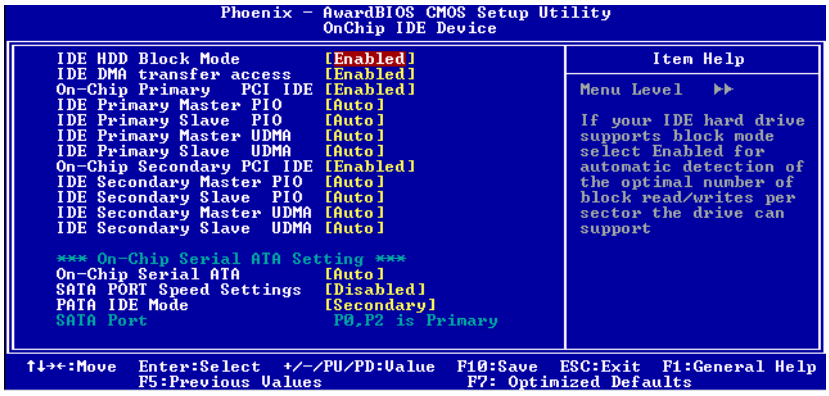
Press <Esc> to return to the Advanced Chipset Featurs page, and press it again, return to the Main Menu page.

4.8 Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
OnChip IDE Device [Press Enter]
Onboard Device [Press Enter]
SuperIO Device [Press Enter]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **OnChip IDE Device**
  Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.


Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
*** On-Chip Serial ATA Setting ***
On-Chip Serial ATA [Auto]
SATA PORT Speed Settings [Disabled]
PATA IDE Mode [Secondary]
SATA Port P0,P2 is Primary
Item Help
Menu Level ▶▶
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

  - **IDE HDD Block Mode**
    Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic

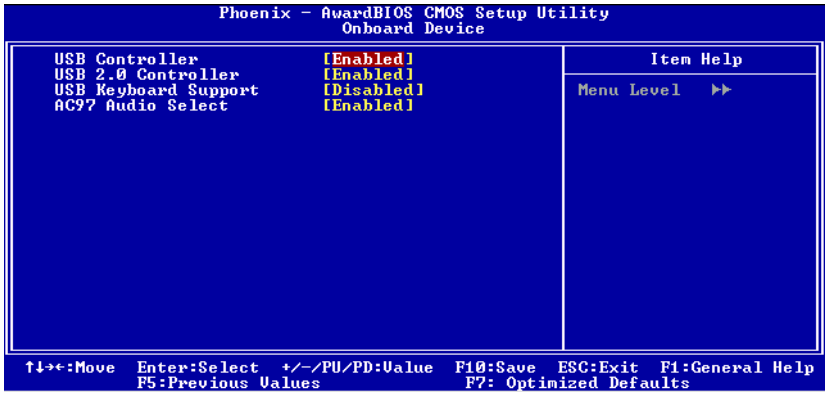
detection of the optimal number of block read/writes per sector the drive can support.

- **IDE DMA transfer access**
  Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.
- **On-Chip Primary/Secondary PCI IDE**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.
  ***NOTE**: Choosing Disabled for these options willautomatically remove the IDE rimaryMaster/Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*
- **IDE Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
- **IDE Master/Slave UDMA**
  Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

Press <Esc> to return to the Integrated Peripherals page, and press it again, return to the Main Menu page.

- **Onboard Device**

  Scroll to this item and press <Enter> to view the sub menu Onboard Device.

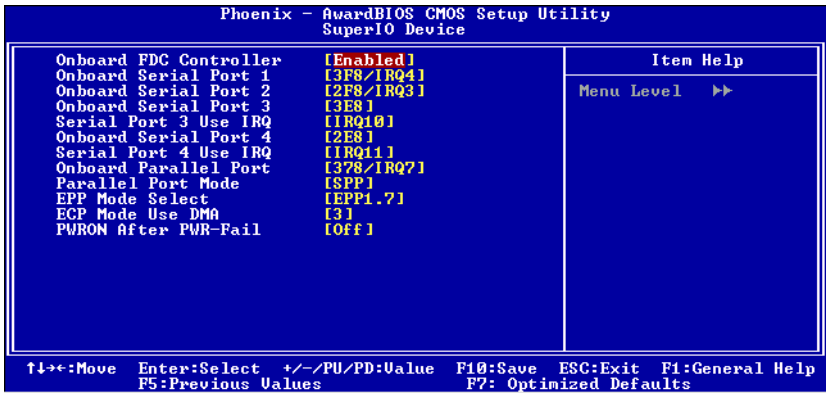

Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device
USB Controller [Enabled]
USB 2.0 Controller [Enabled]
USB Keyboard Support [Disabled]
AC97 Audio Select [Enabled]
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

  - **USB Controller**
    Enable this item if you are using the USB in the system. You should disable this item if a higher-level controller is added.
  - **USB 2.0 Controller**
    Enable this item if you are using the EHCI (USB2.0) controller in the system.
  - **USB Keyboard Support**
    Enable this item if the system has a Universal Serial Bus (USB) controller, and you have a USB keyboard.
  - **AC'97 Audio Select**
    Use this item to enable or disable the onboard AC'97 Audio function.

Press <Esc> to return to the Integrated Peripherals page.

- **Super IO Device**

  Scroll to this item and press <Enter> to view the sub menu Super IO Device.


Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device
Onboard FDC Controller [Enabled]
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
Onboard Serial Port 3 [3E8]
Serial Port 3 Use IRQ [IRQ10]
Onboard Serial Port 4 [2E8]
Serial Port 4 Use IRQ [IRQ11]
Onboard Parallel Port [378/IRQ7]
Parallel Port Mode [SPP]
EPP Mode Select [EPP1.7]
ECP Mode Use DMA [3]
PWRON After PWR-Fail [Off]
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

  - **Onboard FDC Controller**
    Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. The options available are Enabled, Disabled.
  - **Onboard Serial Port 1 / 2 /3**
    Select an address and corresponding interrupt for the serial port. Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.
  - **Onboard Paralellel Port**
    This item allows you to determine access onboard parallel port controller with which I/O address. The options available are 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.
  - **Parallel Port Mode**
    Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The options available are EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.
  - **EPP Mode Select**
    Select EPP port type 1.7 or 1.9.
  - **ECP Mode Use DMA**
    Select a DMA channel for the parallel port for use during

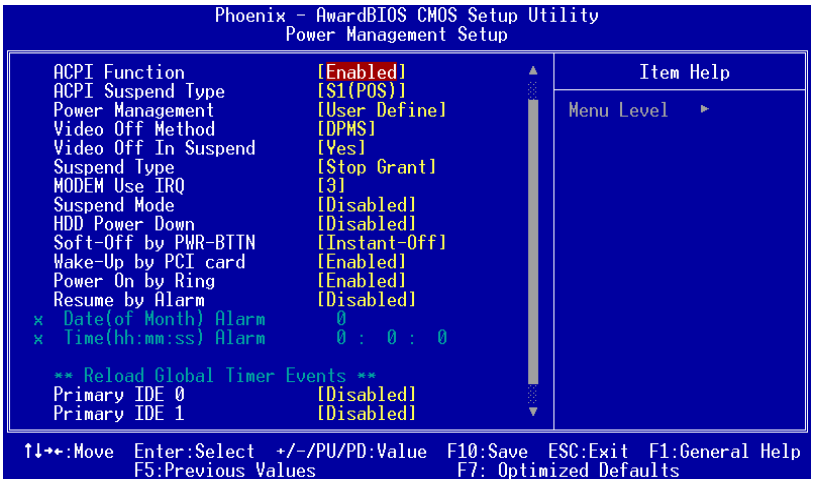
ECP mode.

➢ **PWRON After PWR-Fail**
This item enables your computer to automatically restart or return to its operating status.

Press <Esc> to return to the Integrated Peripherals page, and press it again, return to the Main Menu page.

4.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Enabled]
ACPI Suspend Type [S1(POS)]
Power Management [User Define]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
MODEM Use IRQ [3]
Suspend Mode [Disabled]
HDD Power Down [Disabled]
Soft-Off by PWR-BTTN [Instant-Off]
Wake-Up by PCI card [Enabled]
Power On by Ring [Enabled]
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Primary IDE 0 [Disabled]
Primary IDE 1 [Disabled]
Item Help
Menu Level ▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".
- **ACPI Suspend Type**
  This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1(POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

[S3(STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

- **Power Management**
  This option allows you to select the type of power Management. The options available are APM, ACPI.
- **Video Off Method**
  This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	Turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

- **Suspend Mode**
  After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded

- **HDD Power Down**
  If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active.

- **Soft-Off by PWR-BTTN**

  This option only works with systems using an ATX power supply. It also allows the user to define which type of soft power OFF sequence the system will follow. The default value is "Instant-Off".

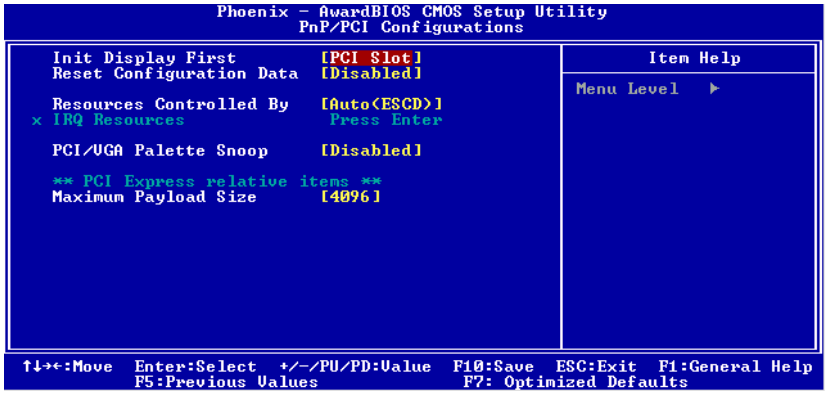
Instant-Off	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

- **Wake-Up by PCI card**
  If enable this item, the system can automatically resume when the PCI Modem or PCI LAN card receives an incoming call.
- **Power On by Ring**
  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is *"Enabled"*.
- **Resume by Alarm**
  If enable this item, the system can automatically resume after a fixed time in accordance with the system's RTC (realtime clock).

Press <Esc> to return to the Main Menu page.

4.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Init Display First [PCI Slot]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
** PCI Express relative items **
Maximum Payload Size [4096]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Init Display First**
  This item allows you to decide to active whether PCI Slot or AGP first. The options available are PCI Slot, AGP.
- **Reset Configuration Data**
  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: Enabled, Disabled.
- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.
- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:
  1. Legacy ISA Devices compliant with the original PC AT bus

specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

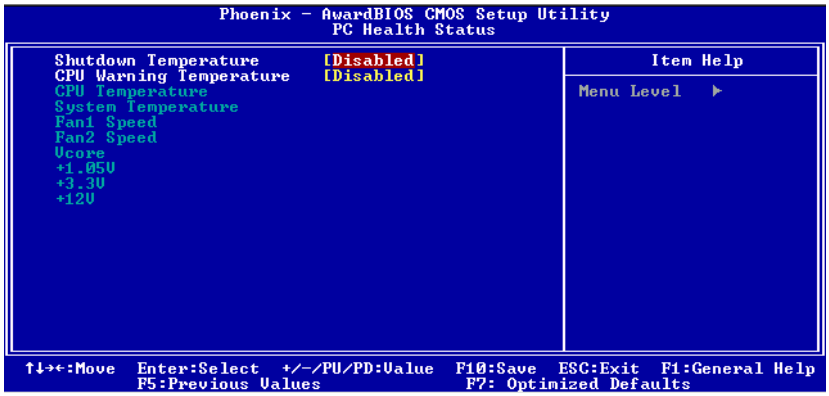
2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The default value is *"PCI/ISA PnP"*.

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

4.11 PC Health Status

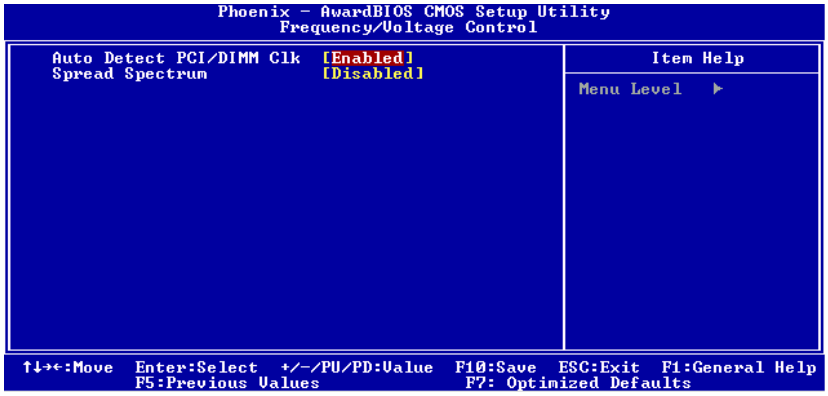
This section supports hardware monitering that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.



- **Current CPU Temperature**
  These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.

4.12 Frequency/Voltage Control

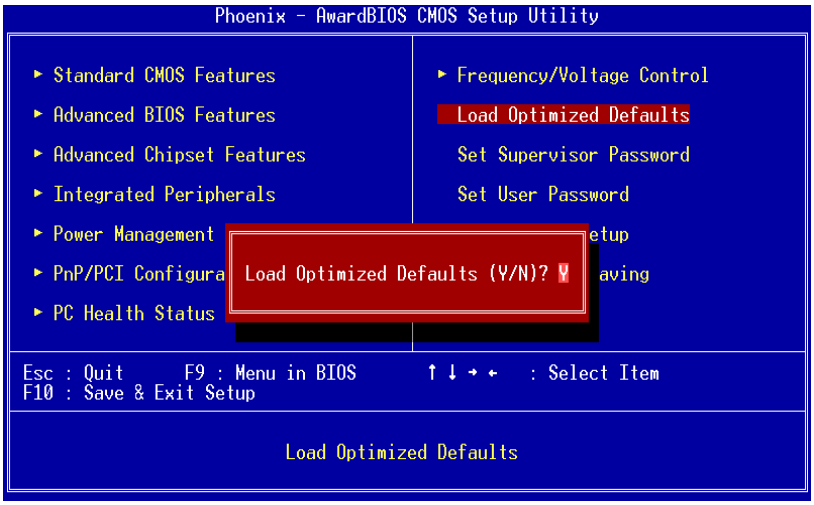
This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.


Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
Auto Detect PCI/DIMM Clk [Enabled]
Spread Spectrum [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Auto Detect PCI Clk**
  The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).
- **Spread Spectrum**
  If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.

4.13 Load Optimized Defaults

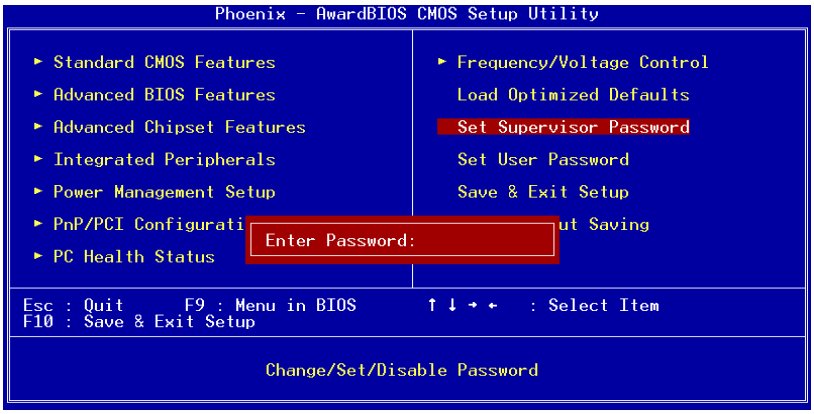
This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.

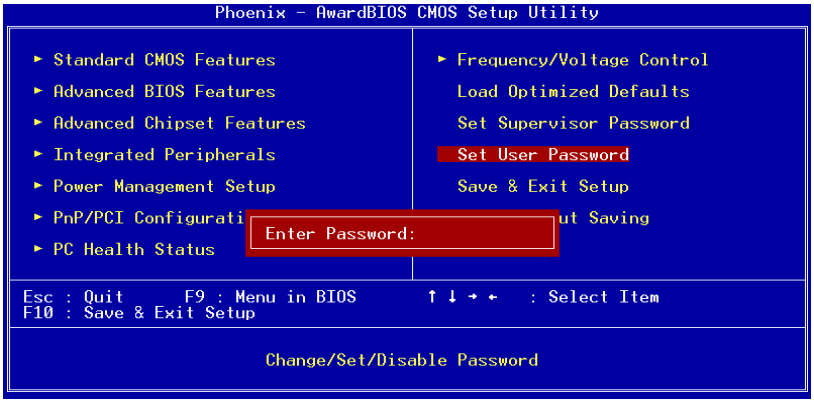


To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

4.14 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:


Phoenix - AwardBIOS CMOS Setup Utility
► Standard CMOS Features
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Power Management Setup
► PnP/PCI Configurati
► PC Health Status
► Frequency/Voltage Control
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
ut Saving
Enter Password:
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
Change/Set/Disable Password


Phoenix - AwardBIOS CMOS Setup Utility
► Standard CMOS Features
► Advanced BIOS Features
► Advanced Chipset Features
► Integrated Peripherals
► Power Management Setup
► PnP/PCI Configurati
► PC Health Status
► Frequency/Voltage Control
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
ut Saving
Enter Password:
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
Change/Set/Disable Password

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

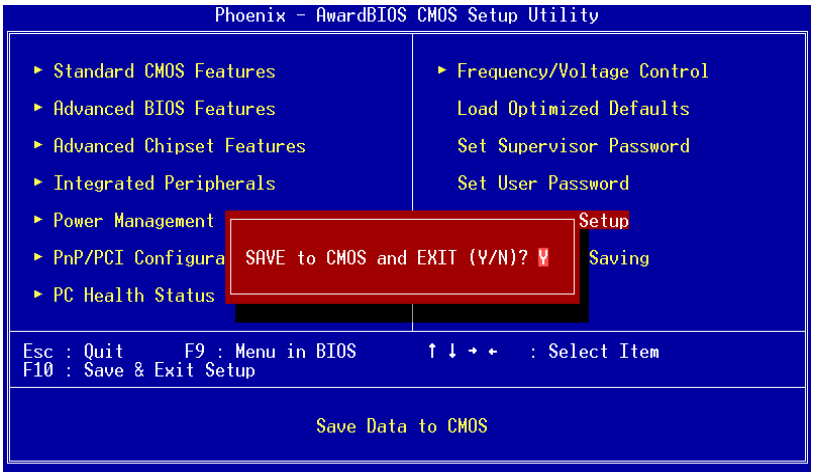
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

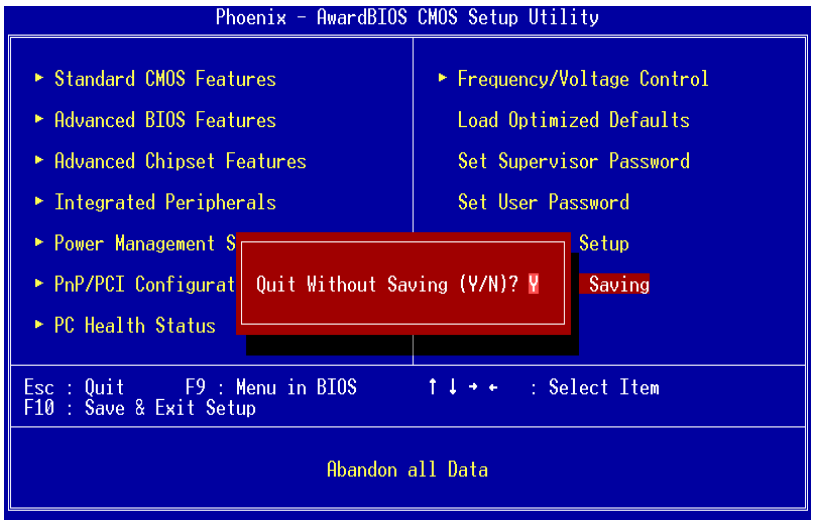
4.15 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.



4.16 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.



A p p e n d i x A
Watch Dog Timer

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start
↓
Un-Lock WDT:
O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O
↓
Select Logic device:
O 2E 07
O 2F 08
↓
Activate WDT:
O 2E 30
O 2F 01
↓
Set Second or Minute :
O 2E F5
O 2F N N=00 or 08(See below table)
↓
Set base timer :
O 2E F6
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓

WDT counting re-set timer :
O 2E F6
O 2F M ; M=00,01,02,…FF(See below table)

; IF to disable WDT:
O 2E 30
O 2F 00 ; Can be disable at any time

- Timeout Value Range
  - 1 to 255
  - Minute / Second
- Program Sample

  Watchdog Timer can be set to system reset after 5-second timeout.

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	
2F, N	Set Minute or Second N=08 (Min),00(Sec)
2E, F6	
2F, M	Set Value M = 00 ~ FF

A p p e n d i x B
Digital I/O

Digital I/O Software Programming

- GPI program sample:

O 2E 87	
O 2E 87	
O 2E 2A	
O 2F FF	Setting GP10~GP17
O 2F FF	
O 2E 07	
O 2F 07	Select Device 7
O 2E 30	
O 2F 01	Setting logic device active
O 2E F0	
O 2F E0	GP10~GP14 Setting: output GP15~GP17 Setting: input
O 2E F1	If output pin, it can be read or written; if input pin, it can be read only.
I 2F	Display input read value

- GPO program sample:

o 2e 87	
o 2e 87	
o 2e 2A	
o 2f FF	Setting GP10~GP17
o 2e 07	
o 2f 07	Select Device 7
o 2e 30	
o 2f 01	Setting logic device active
o 2e F0	
o 2f E0	GP10~GP14 Setting: output GP15~GP17 Setting: input
o 2e F1	If output pin, it can be read or written; if input pin, it can be read only.
o 2f FF	